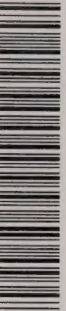


3 1761 1155091 5



CALL NO.
CA1
EP 154
-78G37
GOVT

Government
of Canada

Gouvernement
du Canada

Environmental
Assessment Review

Examen des évaluations
environnementales

Government
Publications

GUIDELINES FOR THE PREPARATION
OF AN ENVIRONMENTAL IMPACT STATEMENT

FOR

IMPROVEMENTS TO THE
TRANSCANADA HIGHWAY
IN BANFF NATIONAL PARK



ENVIRONMENTAL ASSESSMENT PANEL
OTTAWA, ONTARIO
SEPTEMBER, 1978

Canada

CAI
EP 154

-78G37



Government
of Canada

Gouvernement
du Canada

Government
Publications

Environmental
Assessment Review

Examen des évaluations
environnementales

GUIDELINES FOR THE PREPARATION
OF AN ENVIRONMENTAL IMPACT STATEMENT

Q

FOR

IMPROVEMENTS TO THE
TRANSCANADA HIGHWAY
IN BANFF NATIONAL PARK



ENVIRONMENTAL ASSESSMENT PANEL
OTTAWA, ONTARIO
SEPTEMBER, 1978

Canada



Digitized by the Internet Archive
in 2022 with funding from
University of Toronto

<https://archive.org/details/31761115550915>

GUIDELINES FOR PREPARATION OF AN ENVIRONMENTAL IMPACT STATEMENT FOR PROPOSED IMPROVEMENTS TO THE TRANS-CANADA HIGHWAY IN BANFF NATIONAL PARK

TABLE OF CONTENTS

	<u>PAGE</u>
1. OVERVIEW SUMMARY	1
2. THE PROJECT SETTING	2
2.1. Declaration and Objective	2
2.2. The Need	2
2.3. Alternatives	3
2.4. Associated Projects	3
3. THE PROPOSAL	3
3.1. General Layout	4
3.2. Pre-Construction Details	4
3.3. Construction Details	4
3.4. Operation and Maintenance	5
3.5. Abandonment	5
4. DESCRIPTION OF EXISTING ENVIRONMENT AND RESOURCE USE	5
4.1. Climate	6
4.2. Terrain	6
4.3. Hydrology	7
4.4. Flora	7
4.5. Fauna	7
4.6. People	8
4.7. Land, Water and Resource Use	8
5. ENVIRONMENTAL IMPACTS AND MITIGATING MEASURES	9
5.1. Climate	10
5.2. Terrain	10
5.3. Hydrology	10
5.4. Flora	11
5.5. Fauna	11
5.6. People	11
5.7. Land, Water and Resource Use	12
6. RESIDUAL IMPACTS	12
7. ANNEXES	13

INTRODUCTION

The Environmental Assessment and Review Policy of the Government of Canada requires that proposed projects initiated or funded by the federal government or with federal lands involved, and which are likely to have significant adverse environmental effects, be submitted to an Environmental Assessment Panel for review prior to the issuance of the necessary authorities to proceed. The Panel, reporting to the Minister of the Environment, reviews an Environmental Impact Statement (EIS) prepared by or for the Proponent of the project, and is submitted by an Initiator department.

These guidelines have been prepared in order that the environmental impact of the proposed twinning of the Trans-Canada Highway in Banff National Park can be determined. The Initiator and proponent for this project is the Department of Public Works.

The Initiator and Proponent are expected to observe the intent rather than the letter of the guidelines and to make every effort to identify and describe all environmental impacts likely to arise from the Project, even for those situations not explicitly identified in these guidelines. Any changes or major deviations from these guidelines are to be approved by the Environmental Assessment Panel prior to implementation.

It should be recognized that the EIS and its review by the public and technical agencies provides the Panel with a pool of information as a basis for its Report. It is possible that these guidelines include matters which, in the judgement of the proponent, are not relevant or significant to the project or to the study area. This should be so indicated in the EIS. The public and technical agencies will have the opportunity to comment upon this judgement and the Panel may subsequently require additional information from the proponent before proceeding with its Report.

Sections 1.0 through 7.0 outline the content of the EIS the Panel wishes to receive. Section 1.0 calls for an Overview Summary, suitable for review by executives, the media and the public. It will capture in brief the possible environmental impacts of the Project and the efforts that will be made to identify and quantify, avoid and mitigate them. Sections 2.0 and 3.0 outline the basic information requirements for the Project itself, from initiation to abandonment. Section 4.0 outlines existing environmental features including current use of resources.

Section 5.0 calls for the identification of likely environmental impacts resulting from the Project activities as well as measures proposed to avoid, mitigate or counteract the undesirable consequences. Section 6.0 requires the identification, and quantification where possible, of residual impacts remaining after all mitigating measures have been taken. An assessment should be made of their significance and of any information deficiencies that may affect the validity of the EIS. The Appendices, Section 7.0, outline references, data, and source information used to support the development and preparation of the EIS.

1. OVERVIEW SUMMARY

The overview summary should be written in such a manner as to allow reviewers to focus immediately on items of concern. It should be written in terms understandable by the general public and in a format that allows it to be extracted directly for publication by the media as required, or for use by senior executives requiring a quick appraisal of the situation.

The overview summary should briefly describe the project, the probable measures recommended by the Initiator and the significance of the residual unmitigated environmental impacts. Any aspects of the development which might raise public concern should be clearly described. The summary should also identify data gaps or knowledge deficiencies, and the limitations which these deficiencies impose on the Environmental Impact Statement.

2. THE PROJECT SETTING

The details of the project setting shall cover the identification of the proponent (Department of Public Works), the Initiating Department of the Federal Government (Department of Public Works), and the initiators consultants or agents. In addition, this section shall describe the objective of the project, its justification alternatives, and details of how this project fits into other general planning for the surrounding area.

2.1. Declaration & Objectives

The Initiator must be identified and take responsibility for statements and judgments in the EIS. The Initiator's agent for carrying out the assessment must be identified, complete with qualifications and references. The objective of the project must be clearly stated.

2.2. The Need

The Initiator must provide the justification for:

- a) the demand for the project;
- b) the location of the project at the proposed site; and
- c) the timing, with respect to demand, for the project and related projects.

The Initiator must clearly describe the relationship of the proposed project to publicly adopted policy and plans, such as federal, provincial, and regional.

The section should include demand forecast curves, a description of existing and historic demands and the location of the demand. Pertinent timing, routing and vehicle mix factors associated with the demand should be discussed.

2.3. Alternatives

The Initiator must provide a description of all practicable alternatives to the Trans Canada Highway twinning under study. The description should include those alternatives which were rejected and should give sufficient detail to allow the reviewer to comparatively evaluate the costs, benefits and environmental risks of all considerations.

Thus, the alternatives to be considered must include, alternative routes and configurations, alternative modes of transportation, the no-development alternative, and the postponement alternative.

2.4. Associated Projects

The Initiator should include in this section, the relationship of the project to other existing or proposed projects (perhaps not controlled directly by the Initiator) or as a component of larger plans or programs. If the project under review will have the effect of accelerating or otherwise stimulating these other projects, then the environmental effects of this alteration should be described (i.e. secondary roads, new visitor use areas, etc.).

3. THE PROPOSAL

All alternatives not discarded in 2.3. above must be described under each heading which follows. The factors common to all alternative means of completing the proposal may be discussed first, followed by a description of the factors peculiar to individual alternatives.

3.1. General Layout

The Initiator should provide a suitable scale map showing the proposed alignment in relation to other rights of way (eg. CPR Calgary Power Transmission Lines, oil and gas pipelines, easily recognizable geographic features (eg. Carrot Creek, Cascade River, Calgary Power Cascade Plant, Tunnel Mountain Campground) and human settlements such as Banff Townsite, within the Project area.

In addition, the Initiator should provide descriptions illustrated with suitable scale contour maps providing relevant information on, as well as the detailed location of, all project facilities, temporary and permanent existing and proposed transport and transmission systems and routes (including proposed right of ways & structures) proposed construction camps, borrow and waste disposal areas, water and fuel supply areas, other ancillary facilities. Environmentally sensitive areas should also be marked on the maps.

The Initiator should describe, using diagrams where necessary:

- a) the clearing boundaries, roadway alignment, profile, cross-sections and construction materials, width of right-of-way, drainage, structures and stream crossings (include access roads). The design standards used should be described in relation to safety and other specific requirements. The possibilities for variance of design standards should be explained by outlining the effects of potential changes and listing minimums where applicable.
- b) typical designs of parts of the project which would be environmentally significant i.e.
 - erosion control measures (bank stabilization, retention of wind-breaks, rip-rap protection, drainage structures, revegetation etc.);
 - watercourse crossings will be used along the route; the criteria to be used in deciding the type of watercourse crossing;
 - others as determined by the Initiator;
 - cross-overs/tunnels for animals;
 - barriers to keep animals off highway;
 - structures and areas with major visual impact.

3.2. Pre-construction Details

The Initiator should describe:

- a) nature and extent and timing of right-of-way surveys;
- b) extent and timing of clearing and method(s) of disposal of accumulated materials, e.g. timber, slash overburden etc.

3.3. Construction Details

The following items should be outlined:

- a) the time for construction of each major part of the proposal and the intended construction schedule;
- b) the construction methods to be used and particularly those which could have a deleterious effect on the environment such as clearing stream crossings, exposure to erosion during earth removal, blasting or seismic disturbance, disposal of waste and surplus materials and possible alternative construction method(s) to the one(s) proposed which may prove to be less economical but provide less impact;
- c) borrow sites for local construction materials, such as sand, gravel, rock and fill material, etc.; their removal volumes involved, transportation techniques and physical characteristics expected after contract completion; sources and quantities of water for road-bed and other construction uses;
- d) location and other details of access roads, increased use of existing roads and other transportation facilities;
- e) location, size, duration and services (eg. water supply, water sources and waste disposal) of construction camps, operational camps;
- f) interruption to natural physical processes in terms of timing and other pertinent variables (e.g. stream flows);
- g) any effluents and emissions (e.g. water, air and noise), in terms of quantity and characteristics caused or attributable to construction or construction camps.
- g) Plans for handling problems created for highway users (including Park visitors) during construction.

3.4 Operation and Maintenance

Describe timing and procedural details of:

- a) types of expected maintenance under normal conditions;
- b) quantities of herbicides, pesticides, dust suppression chemicals, salt and other materials to be applied;
- c) monitoring and contingency plans to correct problems along the route.

3.5. Abandonment

Describe the abandonment and rehabilitation procedures:

- a) life expectancy of the project;
- b) abandonment plans for temporary roads, borrow pits, bridges and culverts, campsites and ancillary facilities;
- c) restoration of existing routes where they are abandoned as a result of reconstruction;
- d) closure, revegetation, and/or alternative use plans for the route and right-of-way when its useful life is completed;
- e) upgrading of temporary roads as permanent access to park areas.

4. DESCRIPTION OF EXISTING ENVIRONMENT AND RESOURCE USE

Section 4.0 should describe the natural environment in the Project Area as it exists prior to Project development with emphasis being placed on those components that are of particular significance.

Where knowledge gaps exist, these should be noted. A qualitative and quantitative description of present resource use should also be included. Maps of appropriate scale, graphs and charts should be included in each subsection to illustrate resource, and environmental information. It should consider the immediate environmental and ancillary areas that may be affected.

The intent of this Section is twofold. The first is to provide the context or baseline description of the natural environment in the Project Area to identify critical areas and to establish a baseline against which the effects, if any, of possible environmental impact can be measured. Secondly, emphasis should be placed on determining the extent and importance of ecological interrelationships. With this information, the proponent should attempt to predict how major natural or man-made changes in the environment could affect the distribution and abundance of various species or groups of species. It is recognized that this integrative approach to ecology is still in its infancy so that the development of definite predictive systems models is not expected.

4.1. Climate

The location of the recording station(s) should be noted along with the historic climatic conditions that prevail in the vicinity of the proposed transportation pathway. The long-term means, extremes, and frequency of occurrence for parameters of significance to the various phases of the project should be provided (e.g. freeze-up dates, hazardous weather conditions, etc.);

4.2. Terrain

The information should be presented on maps of sufficiently large scale.

- a) topography (with contours), landforms, surficial geology, bedrock geology, major soil types;
- b) an indication of material stability;
- c) recognized or anticipated areas of instability (landslides, mudflows, snowslides, earthquake zones, etc.);
- d) special, sensitive, or unique geological or landform features.

4.3. Hydrology

Describe important parameters of ground and surface waters:

- a) physical, chemical and biological parameters (e.g. temperature, flow rate, water table height, physical and chemical stratification, river and lake levels, fish food likely to be affected by transportation route development; the normal seasonal variations and expected maxima and minima of these parameters;
- b) quality, supply, present and proposed use of surface and ground waters;
- c) fluviological data: peak and minimum flow dates and levels, design discharge, monthly velocity means, historic channel movement;
- d) describe duration and extent of ice cover.

4.4. Flora

Describe the plant life in the corridor area:

- a) map biogeoclimatic zones and forest cover; describe forest stand structure, maturity;
- b) describe plant communities within the proposed corridor by species and common names; indicate relative abundance of species, importance to man, and importance to native fauna as habitat and food;
- c) identify undisturbed, rare or unique vegetation; plant life of special economic, historic, social, or scenic value.

4.5. Fauna

Describe:

- a) relative seasonal abundance and distribution within the area of development, of those species of fish, amphibians, reptiles, birds and mammals considered to be of significance with respect to sport, commercial, scientific, ecological or aesthetic value (listed by common and scientific names); distribution of non-vertebrate species considered to be important as food for the above-mentioned species;

- b) rare or endangered species which may be affected by the corridor;
- c) fish migration routing and timing and locations of spawning beds and nursery areas at and downstream from watercourse crossings;
- d) waterfowl migration routes and nesting area, timing and location;
- e) areas critical to the life cycles of wildlife, browsing and migration pathways of big game animals, fur bearers, or other economically valuable species; calving areas near project;
- f) fishing activities and catches.

4.6. People

Describe:

- a) the social, economic and cultural setting of the area;
- b) population distribution (including seasonal fluctuations if relevant), communities, employment, facilities and housing, within the area likely to be affected by the development;
- c) discuss the housing requirements for the expected work force involved in the project;
- d) attitude of the local population, highway users, Park visitors and others toward the development.
- e) the relationship of the existing highway to current uses of Banff National Park.

4.7 Land - Water Resource Uses

This section shall include:

- a) an inventory of present and potential land water resource, uses;
- b) any official plans for the area pertaining to land, water or resource use;
- c) present and potential conflicts or restrictions in terms of existing land use patterns;

- d) where appropriate, land ownership should be addressed;
- e) historical archaeological and paleontological information on the area;
- f) level and value of the recreational and scenic uses;
- g) any other information seen to be of consequence.

5. ENVIRONMENTAL IMPACTS AND MITIGATING MEASURES

The discussion should describe and compare the expected environmental impacts of the alternatives with emphasis on those actions which are likely to cause major environmental disruptions. The assessment of short and long term potential impacts should be made on the basis of information collected from existing sources supplemented by field data. Where factual data is unavailable or of questionable quality, the report should clearly state that the predicted effect(s) was based on subjective judgement and that knowledge gaps exist. Impacts should be considered for the pre-construction, construction, operation, and abandonment phases of the project.

The impacts should be categorized as direct or indirect - those that arise directly from the proposed project, such as interruption of fish migration due to a stream crossing, and those that arise because of secondary activities induced by the project, such as increased fishing pressure following improved access to an area. The Initiator should consider and discuss all potential environmental impacts in the area to be affected by the project in terms which shall include, where appropriate, but not necessarily be restricted to, the topics identified in the following sections. Options and measures available to avoid, minimize, or mitigate harmful effects or to enhance beneficial effects should be investigated and discussed under each topic. General mitigation considerations might involve changes in route, design, scheduling, or operations.

Summarize

- Concerns raised and options and measures available to alleviate those concerns;
- Major concerns for detailed discussion in the following section;
- Plans for surveillance and monitoring.

5.1. Climatology

Discuss the local changes in climate and air quality that may occur as a result of the project and their impact on items 4.2 to 4.7.

5.2. Terrain

The potential impact of the proposed project on the terrain should be discussed including:

- a) geological stability (land slides, avalanches and other mass movements);
- b) slope stability and erosion resulting from the removal of surficial material during construction and operation or other causes;
- c) unique land forms;
- d) cuts, fills, tunnels and other terrain modifications
- e) quarrying, borrow pits and surplus material disposal.

5.3. Hydrology

The potential impact of the project on both ground and surface water should be discussed including alterations of quality and quantity and flora, fauna and use effects.

- a) interruption to river flows and changes in lake levels;
- b) changes in drainage patterns including encroachment onto flood-plains;
- c) changes in surface and groundwater quality;
- d) effects of floods or destructive storms;
- e) migration of stream channels, ice jams, icing upstream ponding, streambed scouring, backwater curves;
- f) channel or velocity changes and obstructions during construction or operation;

- g) introduction of sediments, suspended solids slash, hazardous materials or contaminants during construction or operation.

5.4 Fauna

The potential interference with fauna populations (fish, wildlife and waterfowl and others) should be discussed including:

- a) impact of routing on migration pathways, browsing areas and other areas used by animals
- b) animal collisions
- c) interface with humans
- d) rare and endangered species
- e) wildlife harassment
- f) noise problems

5.5 Flora

The potential impact of the project on Flora should be discussed together with effects on fauna including:

- a) loss or modification of habitats in general;
- b) changes to sensitive habitats such as those of rare and endangered species, breeding or staging grounds for waterfowl, big game, fur bearers or others, feeding and spawning grounds of fish, wet lands and marshes frequented by migratory birds;
- c) schedules and procedures of herbicide and pesticide use, type and quantity of chemicals, their expected persistence, toxicity and mobility in the environment;
- d) proposed cuttings through forest;
- e) removal of buffer zones close to water bodies.

5.6 People

Discuss: the direct or indirect effects of location and construction of the proposed project both within the immediate area and elsewhere including:

- a) the impacts on economic activity;
- b) the changes in quality of lifestyles which may be caused by construction or operation of the project, including experiences that a visitor expects to obtain in a National Park;
- c) how the population size, composition, and distribution in the area both permanent and temporary, might change as a result of direct or indirect consequences of the project in the construction and operating phases, and the implications of the changes;

5.7 Land, Water & Resource Use

Discuss the impact of the proposed project on present and future land, water, and resource use including:

- a) changes, conflicts or restrictions in uses, official plans or ownership and overtaking of facilities with particular reference to Banff National Park;
- b) changes in aesthetic and/or recreational opportunities which may be caused by the construction or operation of the project, items such as additional noise and visual aspects should be included in this section;
- c) effect on archaeological, historic, and scenic sites prior to and during the construction phase and procedures designed for the preservation of such sites;
- d) temporary restrictions on land use during construction, effects on local traffic patterns.

6. RESIDUAL IMPACTS

The environmental impacts that remain after all practical mitigating measures have been incorporated into the proposals should be discussed in terms of the nature, extent and duration of all such impacts on the environment and the implications, to international, national, regional, local and site-specific interests.

ANNEXES

The annexes to the E.I.S. should include:

- an annotated list of references cited - i.e. documentation;
- copies of reports developed from studies associated with the evaluation;
- supplementary pictorial displays.

